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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT INVESTIGATIONS

REPORT OF PINE BEETLE SURVEYS
ON THE
MOUNT HOOD NATIONAL FOREST AND ADJACENT TIMBERLANDS
SEASONS OF 1941 AND 1942

By

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March 1943

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SEASONS OF 1941 AND 1942

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ABSTRACT

A. The 1940 and 1941 Infestations (Complete record)

1. Primary insect - Western pine beetle in ponderosa pine.
2. Estimated total pine timber killed -

	<u>No.</u> <u>Trees</u>	<u>Volume</u> <u>(BM)</u>	<u>Volume</u> <u>Per Acre</u>	<u>Percent</u> <u>of Stand</u>
1940	38,000	23,000,000	105	2.0
1941	25,700	16,000,000	75	1.4

3. Classification of infestation - Heavy epidemic.
4. Trend of infestation - Since 1937 the trend has been steadily upward until 1941, when a slight decline occurred. The 1940 losses were the highest ever recorded on the check plots.

B. The 1942 Infestation (Partial Record)

1. Primary insect - Western pine beetle in ponderosa pine.
2. Probable trend - Upward from 1941, losses greater than those of 1941.
3. Recommendations - Opening up of forest to sanitation-salvage logging as best method of controlling pine beetles.

REPORT OF PINE BEETLE SURVEYS
ON THE
MOUNT HOOD NATIONAL FOREST AND ADJACENT TIMBERLANDS
SEASONS OF 1941 AND 1942

Surveys to determine the extent and severity of pine beetle infestations in the ponderosa pine stands of the Mount Hood National Forest and adjacent timberlands have been conducted annually since 1937. These surveys have been possible through the cooperative efforts of the Forest Service and the Bureau of Entomology and Plant Quarantine. The results of the 1942 survey are presented herewith. A summary of the 1941 surveys is also included because no survey report was made last year.

The surveys of the 1941 and 1942 seasons were conducted during the periods and by the personnel shown below:

	<u>1941 Survey</u>	<u>1942 Survey</u>
<u>Period</u>	October 16-20	October 9-12
<u>Forest Service Personnel</u>	F. E. Kinney G. W. Summerside H. A. Dahl (Directed by A. J. Jaenicke)	C. M. Bail R. W. Hudson
<u>B.E. & P.Q. Personnel</u>		J. M. Whiteside
<u>Costs</u>	Salary and transportation paid by Forest Service	Transportation paid by B.E. & P.Q. Salaries paid by each agency

On each survey a 100 percent cruise was made on three half section check plots, in which, all dying and recently dead, and windthrown ponderosa pine were blazed, numbered, measured, and recorded. During the 1942 survey a ten percent cruise of the green stand was made on the three plots in which the trees were classified by diameter and by the California system of rating the current health of the trees. Infestation trends were computed from the plot data and used to make generalized estimates of recent insect-caused losses within the area. Because only part of the 1942 losses were marked, only one estimate for 1942 has been included (see Figure 2).

RESULTS OF THE SURVEYS

Losses in 1940

The 1941 survey completed the loss data for 1940 and gave preliminary data for 1941 on the three check plots. Terrific losses occurred throughout the already badly depleted pine stands of the Mount Hood in 1940 - losses that were higher than any previously marked on the check plots. The gross 1940 losses on the three plots ranged from 167 to 450 board feet per acre or from 2.35 to 6.40 percent of the stand. The average for the plots was 323 board feet per acre or 3.38 percent of the stand (Table 1). The losses on the 8 Mile Creek and Happy Ridge plots increased greatly over those of 1939, while on the Burnt Mill plot there was a reduction of 5 percent from the 1939 losses.

Losses in 1941

Loss data for 1941 were completed and partial data for 1942 were obtained during the survey of 1942 of the three check plots. Although the trend of the 1941 losses was downward from the level of the 1940 losses, pine beetles continued to take a very heavy toll of the mature pine trees. The gross 1941 losses on the three plots were nearly uniform, averaging 247 board feet per acre or 3.04 percent of the stand (Table 1). On the 8 Mile Creek and Happy Ridge plots the trend was down from the 1940 level but on the Burnt Mill plot the reverse was true.

Both the 1940 and the 1941 losses represent a heavy epidemic infestation. The losses occurred in single trees and in groups of trees varying from 2 to 22 trees per group. Practically all of this damage was attributable to the western pine beetle (Dendroctonus brevicomis Lec.), with a small percentage of the trees killed by the mountain pine beetle (D. monticola Hopk.), Ips sp., and Melanophila sp.

Estimates of gross losses on the Mount Hood National Forest as a whole (Table 2) indicate that approximately 2.0 percent of the stand was killed in 1940 and about 1.4 percent in 1941. The accompanying map shows the general loss situation in 1941.

It is true that part of these losses have been offset by annual pine growth. However, the replacement by growth on the Mount Hood is greatly overshadowed by the factor of insect-caused depletion. It is extremely doubtful whether growth will balance the annual depletion on this forest, until after the present mature stand is largely killed and replaced by second growth. If gross growth is considered to be 35 board feet per acre, then the net depletion for 1940 over the entire forest was 65 board feet per acre and for 1941 it amounted to 40 board feet per acre.

Infestation Trend

The trend of western pine beetle depredations on the Mount Hood since the start of the surveys is shown in Figure 2. Since 1936, the trend has been steadily upward until 1941 when the losses decreased slightly. The indications are that the losses for 1942 will be higher than those of 1941, for the trend has again swung upward.

RECOMMENDATIONS

It has been stated in other reports covering the annual surveys on the Mount Hood, that the solution of the present insect problem in these pine stands is in the field of timber management and not in the direct control of the western pine beetle. The recommendation that the ponderosa pine on this forest be rapidly cut-over by one or several sanitation-salvage operations is made again at this time. In this connection, it is gratifying to know that in 1942 there will be at least one National Forest Timber Sale made in one of the heaviest centers of infestation - the Fifteen Mile Creek drainage. It would be extremely helpful if more of the 8 seasonal sawmills, operating in Wasco County, could be interested in cutting ponderosa pine on the Mount Hood in order to alleviate the wasteful depletion now taking place. Until this condition is improved, the stands will probably continue to suffer a tremendous annual depletion which can only result in further financial losses, greater accumulations of snags, and increased fire hazards.

Table 1.- Pine timber killed by bark beetles on virgin check plots in 1940 and 1941 — Mount Hood National Forest and adjacent timberlands.

Unit and Check Plot	Year	Ponderosa Pine Type		Gross Losses				
		Acres	Volume (B.)	No. of Trees	Volume (BU)			
					Total	Per Acre	Percent of Stand	Ratio to Previous Year
DUFUR								
8 Mile Creek	1940	320	2,250,000	237	144,100	450	6.40	3.40
	1941	320	2,120,000	127	75,660	236	3.57	.53
WAMIC								
Happy Ridge	1940	320	3,540,000	154	112,400	351	3.18	1.40
	1941	320	3,450,000	129	87,250	273	2.53	.78
Burnt Mill	1940	320	2,270,000	138	53,430	167	2.35	.95
	1941	320	2,230,000	118	72,740	227	3.26	1.36
PLOTS TOTAL	1940	960	8,060,000	529	309,930	323	3.34	1.69
	1941	960	7,800,000	374	237,650	247	3.04	.77

Table 2. - Estimated insect-caused depletion of ponderosa pine in 1940 and 1941 -- Mount Hood National Forest and adjacent timberlands.

Infestation Areas and Units	Year	Ponderosa Pine Type			Estimated Gross Losses				
		Acreage		Total Volume (MBM)	Trees		Volume (MBM)		
		Virgin	Total		Total	Per Section	Total	BM Per Acre	Perce of Stand
EAST SIDE									
Mosier	1940	19,000	26,000	88,850	1,000	25	600	25	.7
	1941	19,000	26,000	88,800	700	20	400	15	.5
Dufur	1940	38,100	61,100	290,300	16,000	170	10,500	170	3.6
	1941	38,100	61,100	283,000	8,000	85	5,000	80	1.8
Wamic	1940	83,600	90,600	597,300	15,000	105	8,900	100	1.5
	1941	83,600	90,600	592,000	13,000	85	8,600	95	1.5
Total	1940	140,700	177,700	976,450	32,000	115	20,000	115	2.1
	1941	140,700	177,700	963,800	21,700	85	14,000	80	1.5
BEAR SPRINGS									
Warm Springs	1940	31,700	37,700	175,600	6,000	100	3,000	80	1.7
	1941	31,700	37,700	174,200	4,000	70	2,000	50	1.2
FOREST TOTAL	1940	172,400	215,400	1,152,050	38,000	115	23,000	105	2.0
	1941	172,400	215,400	1,138,000	25,700	80	16,000	75	1.4

FIGURE 2

TREND OF WESTERN PINE BEETLE LOSSES
MOUNT HOOD NATIONAL FOREST AND ADJACENT TIMBERLANDS
(Basis 3 Flots = 960 Acres)

